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PATENT  
040002

## INTERACTIVE USER INTERFACE FOR DISPLAYING SUPPLY CHAIN INFORMATION

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### BACKGROUND OF INVENTION

[0001] The present invention is directed generally to systems and methods for presenting supply chain information interactively.

[0002] In the financial services industry, the value of information decays rapidly. As a result, value for an investor can be created by compressing the response time by the investor (or a manager of the investor's assets) to important news. For example, if a company announces plans to enter bankruptcy protection, it may be valuable to an investor to quickly consider its positions on suppliers, creditors, customers and/or competitors of the bankrupt company in response to the news – before others can act on it. Determining the suppliers, creditors, customers and competitors of a company, however, in a rapid fashion – rapid enough to maximize or increase value to the investor – is not always possible. In the past, investors have relied on institutional knowledge of these interdependencies and relationships, or have relied on paper charts of the information. Such mechanisms are often inaccurate, outdated, cumbersome, static and/or incomplete. Therefore, there exists a need for a manner in which an investor can quickly and interactively navigate through an industry's supply chain to see key interdependencies and relationships between the spectrum of participants.

## SUMMARY OF THE INVENTION

[0003] In one general aspect, various embodiments of the present invention are directed to an interactive user interface. The interface may include a first field and at least one additional field. The first field lists a focal item and the at least one additional field contains a listing of items related to the focal item. Certain of the related items in the at least one additional field include a hyperlink which, when activated by the user, causes the item corresponding to the activated hyperlink to become a new focal item listed in the first field, such that the at least one additional field transitions to list items related to the new focal item.

[0004] According to various implementations, the focal item may be an identifier corresponding to a company and the at least one additional field may contain a listing of identifiers corresponding to companies that are customers, suppliers or competitors of the focal item company. In this way, the user may interactively navigate through the supply chain for a company to ascertain, for example, key interdependencies that may be valuable in providing timely investing advice. For example, the user could navigate three or more derivatives up, down, or across the supply chain very quickly and discern the impact of market moves on players several orders down or upstream. In other variations, the focal item may be an economic indicator and the at least one additional field may list companies whose stock prices are known to be heavily affected by changes in the particular economic indicator.

[0005] In another general aspect, various embodiments of the present invention are directed to a system for providing the interactive user interface to the user. The system comprises a database for storing data about the items (e.g., companies) and a server in communication with the database. The server may serve a document containing the interactive user interface via a network to the user. The interactive user interface may include, as before, a first field and at

least one additional field. The first field lists a focal item and the at least one additional field contains a listing of items related to the focal item. Certain of the related items in the at least one additional field include a hyperlink which, when activated by the user, causes the item corresponding to the activated hyperlink to become a new focal item listed in the first field, such that the at least one additional field transitions to list items related to the new focal item.

[0006] In yet another general aspect, various embodiments of the present invention are directed to a method of presenting or displaying data in an interactive user interface to a user. The method may include displaying a first page. The first page may include the interactive user interface, including a focal item in a first field and a listing of items related to the focal item in the at least one additional field, wherein certain of the related items include a hyperlink. In addition, the method may include displaying a second page when the user activates one of the hyperlinks of the first page. The second page may include a revised version of the interface, wherein the item corresponding to the activated hyperlink in the first page is the new focal item. The second page may further include, as before, a listing of new items related to the new focal item in the at least one additional field, wherein certain of the new related items in the second page include a hyperlink. In an extension of this technique, the user could continually and quickly jump to new pages, each with a new focal item, to thereby quickly move through a variety of pages and learn the interdependencies and business relationships for each of the various focal items.

#### DESCRIPTION OF THE FIGURES

[0007] Embodiments of the present invention are described below by way of example in conjunction with the following figures, wherein:

Figures 1-3 and 5 are diagrams of an interactive user interface according to various embodiments of the present invention; and

Figure 4 is a diagram of a system according to various embodiments of the present invention.

## DESCRIPTION OF THE INVENTION

**[0008]** Figure 1 is a diagram of an interactive user interface 10 according to various embodiments of the present invention. The user may be presented with the interface 10, as described further below in connection with Figure 4, using a computing device (not shown) having a monitor and web browsing software to display the interface 10 based on pages from a server.

**[0009]** As can be seen in the illustrated embodiment of Figure 1, the interface 10 includes a field 12 positioned toward the center of the interface 10 and which is populated with an item 14. The item 14 may be, for example, an identification of a business entity, such as the stock trading symbol for the business. The user may enter the information for the item 14 or may select it in response to a search query. According to other variations, the item 14 may be, for example, a parameter, such as an economic indicator, including CPI, GNP, etc.

**[0010]** The interface also includes additional fields 16, 18, 20. These additional fields 16, 18, 20 may list items 22 that are related to the item 14 in the field 12. The items 22 may also be an identification of a business entity, such as the stock trading symbol for the business. Because the items 22 listed in the fields 16, 18, 20 are related to the item 14 in the field, the item 14 is sometimes referred to hereinafter as the “focal item.”

[0011] For an interface 10 where the focal item 14 identifies a business entity, the additional fields 16, 18, 20 may list, for example, suppliers, competitors and customers, respectively, of the focal item 14. According to other embodiments, the interface 10 may include more or fewer fields listing items related to the focal item. Additional fields that may be used, for example, are fields that list creditors, debtors, joint venture partners, etc. of the focal item 14.

[0012] Different parameters may be used to determine the items 22 listed in the additional fields 16, 18, 20. For example, according to one embodiment, suppliers and customers of the focal item 14 may be determined based on revenue. That is, for example, each of the items 22 listed in supplier's field 16 may indicate companies that derive a threshold amount (such as 5%) of their revenue through sales to the focal item 14. Similarly, the focal item 14 may derive a threshold amount (such as 5%) of its revenues through sales to companies indicated by the items 22 listed in the customer's field 20. The competitor's field 18 may list items 22 that are indicative of companies that compete with the focal item 14 in the marketplace. Although Figure 1 uses the parameter of revenue to determine the items to be listed in the supplier's and customer's fields 16, 20, other variations of the interface 10 may be different parameters such as, for example, price-to-earnings ratio, inventory level, debt-to-equity ratio, etc.

[0013] Certain of the items 22 (that is, all of the items 22 or less than all of the items 22) in the additional fields 16, 18, 20 may further have associated indicia of the quantity of the parameter defining the relationships. For example, where the parameter is revenue, as shown in the example of Figure 1, certain of the items 22 in the supplier's field 16 may have associated indicia 30 indicative of how much revenue the items 22 derive from sales to the focal item 14. The indicia 30 may be, for example, a number, a graphical representation and/or a color-coded representation. In Figure 1, graphical representations, specifically pie slices, are used as the

indicia 30. For example, the interface 10 may include a key 25 showing the meaning of, for example, the graphical and/or color-coded representations. With reference to the key 25 in Figure 1, company DDD may receive greater than 75% of its revenue from ABC Corp. (the focal item 14), company DDE may receive 50-75% of its revenue from ABC Corp., company DDF may receive 25-50% of its revenue from ABC Corp., and companies DDG and DDH may receive 10-25% of their revenue from ABC Corp. The companies indicated by the other items 22 in field 16 (such as DDJ, DDK, etc.) may receive less than 10% of their revenue from ABC in this example. According to various embodiments, the pie slices may be of different colors to provide a more perspicuous indication of the relationship.

**[0014]** Certain of the items 22 may contain hyperlinks that, when activated by the user, generate a new display with the item 22 corresponding to the activated hyperlink in the field 12 as the new focal item 14. The additional fields 16, 18, 20 would then be populated with items appropriately related to the new focal item 14. For example, with reference to Figure 1, if the user activated the hyperlink for supplier "SDF," a new display would be generated with "SDF" in the field 12 as the new focal item 14, with the fields 16, 18, 20 listing suppliers, competitors and customers of the company corresponding to the symbol "SDF," respectively, as shown in Figure 2.

**[0015]** In addition, certain of the items 22 may have an associated mouseover, such that when the user passes the cursor 36 near the item 22 on the display 10, a display window 38 containing additional information about the company indicated by the item 22 is displayed to the user, such as shown in Figure 3. The additional information may include, for example, the full name of the company, its industry sector(s), its market capitalization, etc.

[0016] Also, as illustrated in Figures 1-3, the user interface 10 may include a focal item input field 72 where the user could type in an identifier for new focal item. For example, according to one embodiment, the identifier could be the stock trading symbol for a company or an abbreviation for an economic indicator (such as GNP, etc.). In this way, rather than activating one of the hyperlinks for one of the items 22 in one of the fields 16, 18 or 20 to be the new focal item, the user could instead type in the symbol for the new focal item in the field 72. When the user clicks on the activation button 73 or hits the "Enter" key on its keyboard, a new page would be displayed for the user with the new focal item 14 in the field 12 and with, for example, the suppliers, competitors and customers of the new focal item 14 listed in the fields 16, 18, 20 respectively.

[0017] As mentioned previously, the focal item 14 may be an economic parameter, such as GNP, CPI, etc. When the focal item 14 is such an economic parameter, one of the additional fields 16, 18, 20 may list items 22 representing companies that are heavily affected by that particular economic parameter. For example, the additional field may include a list of companies whose stock price is known to change in response to changes in the particular economic indicator.

[0018] In this way, users may interactively, quickly and perspicuously navigate through a company's supply chain and see key interdependencies and relationships between the spectrum of participants. For example, the user could navigate through three or more derivatives up, down or across a supply chain quickly to discern the impact of market moves on players several orders down or upstream. With reference to the example of Figure 1, the user may quickly discern that company DDD (in field 16) derives a significant portion of its revenues from ABC Corp. (the focal item 14). Thus, for example, if ABC Corp. happened to announce that it was entering



bankruptcy, the user would know immediately that the continued revenue stream of company DDD may be impaired. This is but one example of the type of information, critically important to investors, that could be discerned using an interactive user interface as described herein.

**[0019]** The interactive user interface 10 may be implemented, in various embodiments, in a web environment. Figure 4 is a diagram of such a system 50 according to various embodiments. The user may view the interface 10 at a client device 52, which may include web browser software 53 for displaying web pages. The client device 52 may be any type of device capable of receiving, rendering and displaying web pages such as, for example, a portable computer (PC), a laptop computer, a workstation, a web-enabled telephone, etc. The interactive user interface 10 may be part of a web page served to the client device 52 from a host computing device 54 (referred to hereinafter as the “host”) through a network 56. The host 54, which is shown as a single device in Figure 4 but which may be embodied as a series of networked computing devices, may include a server 55 for generating the web pages of the interface 10 based on data stored in a database 58. The server 55 may serve the generated web pages via the network 56 to the client device 52.

**[0020]** According to various embodiments, the database 58 may include model data that is tagged and extracted from numerous analysts’ models of companies, but publicly traded and privately held. This data may be processed to gather the customer-supplier relationships, etc. to be shown on the interactive interface 10. The database 58 may utilize XBRL (Extensible Business Reporting Language) data. The data may also be validated. In addition, data from other sources may be included in the database 58. Such additional sources include SEC data (e.g., Edgar Online data) and data from subscription data services. The data from these additional data sources may also be validated.

[0021] As mentioned previously, the user may enter the focal item 14 (see Figure 1), or it may select the focal item in response to a search query or a drill down through a hierarchy of industry sector-related folders. Figure 5 illustrates an example of an interactive user interface 70 through which a user may enter the focal item 14 (see Figure 1) according to various embodiments of the present invention. For the example illustrated in Figure 5, the user may type in the ticker symbol or economic indicator abbreviation for the focal item 14 in the focal item input field 72. Alternatively, the user may drill down through sector folders 74 to enter the focal item 14. Once the focal item is selected, an interactive user interface as shown in Figure 1 may be displayed for the user.

[0022] Referring back to Figure 4, the host 54 may also include an alert engine 80 and a filter 82. The alert engine 80 and filter 82 may be implemented as software code to be executed by a processor(s) (not shown) of the host 54 using any type of computer instruction type suitable, such as, for example, Java, C, C++, Visual Basic, etc., using, for example, conventional or object-oriented techniques. The software code may be stored as a series of instructions or commands on a computer readable medium, such as a random access memory (RAM), a read only memory (ROM), a magnetic medium such as a hard drive or a floppy disk, or an optical medium such as a CD-ROM.

[0023] The alert engine 80 may receive alerts generated by applications (not shown). The alerts may be messages indicating that some type of predetermined event has occurred. The user, via the client device 52, may set criteria that establish the type of alerts to be generated. For example, the user may set criteria such that if the stock price for a particular company changes by more than 5% during one trading day, an alert is generated. The alert engine 80 may

receive the generated alerts and route them to the appropriate users. The alerts may be, for example, messages sent via the network 56 to the user's client device 52.

[0024] The filter 82 may filter data from the database 58 to be displayed on the interactive display 10. For example, with reference to Figure 1, field 16 contains a listing of companies that receive revenue through sales to the focal company (focal item 14). Instead of listing every company in the database 58 that is known to receive revenue from the focal company, the filter 82 may filter out all companies that receive less than a threshold percentage (such as 1%, 2%, 5%, etc.) of their revenue from the focal company. Similarly, the filter 82 may filter out companies for the customer field 20 from which the focal company receives less than a threshold percentage of its revenue. According to various embodiments, the user may select the threshold percentage or an administrator of the host 54 may set the threshold values.

[0025] Various embodiments of the present invention are also directed to a method of presenting data in an interactive user interface to a user. The method may include displaying a first page with the interactive user interface 10, such as shown in Figure 1, to the user. The page may be served as part of a document served to the user's client device 52 by the server 55 of the host 54 (see Figure 4). The method may also include displaying a second page to the user when one of the hyperlinks contained in any of the fields 16, 18, 20 is activated by the user. In the second page, the item corresponding to the activated hyperlink may be the new focal item 14 in the field 12, as shown in Figure 2. As such, the fields 16, 18, 20 may list items related to the new focal item 14. Further, the items in fields 16, 18, 20 in the second page may also have associated hyperlinks and mouseovers, just like the first page. The user may interactively navigate through the supply chain by continually repeating this process, selecting different items (e.g., companies or economic indicators) to be the new focal item.

**[0026]** While several embodiments of the present invention have been described herein, it should be apparent that various modifications, alterations and adaptations to those embodiments may occur to persons skilled in the art. It is therefore intended to cover all such modifications, alterations and adaptations without departing from the scope and spirit of the present invention as defined by the appended claims.